

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of the claims in the applications.

Listing of Claims

[0022] 1. (Currently amended) A micro-valve, comprising:

a fluid guiding structure containing a fluid inlet port and a fluid outlet port;

a fluid communication channel, formed within ~~said~~ the fluid guiding structure,

fluidically coupling ~~said~~ the fluid inlet port to ~~said~~ the fluid outlet port;

an intermediary port, formed within ~~said~~ the fluid communication channel, ~~said~~ the fluid

inlet port being fluidically coupled to ~~said~~ the fluid outlet port valve through

~~said~~ the intermediary port;

a cantilever element, moveably positioned proximate to ~~said~~ the intermediary port

within ~~said~~ the fluid communication channel;

an energy conversion body defining a chamber enclosing a working fluid, ~~said~~ the

energy conversion body being at least partially formed of a semiconductor material, ~~said~~ the

energy conversion body including a flexible membrane mechanically coupled to ~~said~~ the

cantilever element through a first pedestal; and

a ~~stiffening~~ means for stiffening positioned on ~~said~~ the flexible membrane ~~proximate to said~~

between the first pedestal and ~~said~~ the fluid inlet port such that means for stiffening prevents the

flexible membrane from contacting the cantilever.

[0023] (Original) 2. The micro-valve of claim 1 wherein said cantilever element includes a set of

beams operative as a restoring force during deflection of said valve

element by said flexible membrane.

[0024] (Original) 3. The micro-valve of claim 1 wherein said flexible membrane is single crystal silicon between 15 and 100 microns thick.

[0025] (Currently amended) 4. The micro-valve of claim 1 wherein said ~~stiffening~~ means for stiffening is one or more pedestals.

[0026] (Currently amended) 5. The micro-valve of claim 1 wherein said ~~stiffening~~ means for stiffening is one or more regions of increased thickness of said flexible membrane.

[0027] (Currently amended) 6. A micro-valve, comprising:

~~an actuation~~ a means for actuation attached to a flexible membrane;

at least one pedestal;

a cantilever element; and

a means for stiffening the flexible membrane; wherein said the flexible membrane is attached to a the cantilever element through the at least one pedestal; said the cantilever element normally is normally closed over an inlet port; said the inlet port is in fluid communication with at least one outlet port; and a the stiffening means for stiffening is positioned on said flexible membrane proximate to said between the at least one pedestal and said the fluid inlet port such that means for stiffening prevents the flexible membrane from contacting the cantilever.

[0028] (Original) 7. The micro-valve of claim 6 wherein said cantilever element includes a set of beams operative as a restoring force during deflection of said valve element by said

flexible membrane.

[0029] (Original) 8. The micro-valve of claim 6 wherein said flexible membrane is single crystal silicon between 15 and 100 microns thick..

[0030] (Currently amended) 9. The micro-valve of claim 6 wherein said ~~stiffening~~ means for stiffening is comprises one or more pedestals.

[0031] (Currently amended) 10. The micro-valve of claim 6 wherein said ~~stiffening~~ means for stiffening is comprises one or more regions of increased thickness of said flexible membrane.

[0032] (Currently amended) 11. The micro-valve of claim 6 wherein said ~~actuation~~ means for actuation can extend said flexible membrane in a manner proportional to an amount of energy supplied to said ~~actuation~~ means for actuation.

[0033] (Original) 12. The micro-valve of claim 6 wherein said cantilever element contains a compliant element attached onto a portion covering said inlet port.

[0034] (Currently amended) 13. The micro-valve of claim 12 wherein said compliant element comprises at least a portion of PTFE-like material.

[0035] (Withdrawn)14. A mass flow controller comprising:

one or more normally closed micro-valves with pedestal and stiffening means;
one or more normally open micro-valves;
one or more flow restrictors;
one or more micro-machined pressure sensors; and
one or more temperature sensors.

[0036] (Withdrawn) 15. A pressure controller comprising:

one or more normally closed micro-valves with pedestal and stiffening means;
one or more normally open micro-valves;
one or more flow restrictors;
one or more micro-machined pressure sensors; and
one or more temperature sensors.

[0037] (Currently amended) 16. A micro-valve, comprising:

~~an actuation~~ means for actuation attached to a flexible membrane;
~~said~~ flexible membrane attached to a cantilever element through first pedestal;
~~said~~ cantilever element normally closed over an inlet port;
~~said~~ inlet port in fluid communication with at least one outlet port; and
~~said cantilever element having~~ a second pedestal proximate to said first pedestal, wherein said
second pedestal is ~~not~~ attached to said ~~the flexible membrane~~ cantilever element such that the
flexible membrane is prevented from substantially flexing in the normally closed condition.